

Docket No. SP02-143 (015275-060007)  
Application Serial No.: 10/602,242

### LISTING OF CLAIMS

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This listing of claims will replace all prior versions and listings of the claims in the application.

1. (Currently Amended) A method for detecting and identifying a toxin in a sample, the method comprises:

providing ~~an~~ a dried array comprising a plurality of biological lipid membranes associated with a surface of a substrate,

wherein ~~said the~~ surface comprises a coating of an amine-presenting molecule, ~~said biological membranes are deposited directly to said coating wherein the biological lipid membranes comprise a mixture of a host lipid and a doped lipid deposited onto the surface;~~

contacting the array with a solution comprising a ~~target compound~~ toxin; and

monitoring for binding activity of at least one of the biological membrane lipid membranes with ~~said target compound~~ the toxin in the sample.

2. (Currently Amended) The method according to claim 1, wherein ~~said the biological membranes~~ doped lipid contains a toxin-binding moiety.

3. (Cancelled)

4. (Currently Amended) The method according to claim 2, wherein ~~said toxin~~ the toxin-binding moiety is a carbohydrate.

5. (Currently Amended) The method according to claim 4, wherein ~~said the~~ carbohydrate moiety is a ganglioside.

6-8. (Cancelled)

9. (Currently Amended) The method according to claim 1, wherein ~~said the~~ biological lipid membranes are arranged in distinct microspots.

10. (Currently Amended) The method according to claim 1, wherein ~~said target compound~~ the toxin has at least one constituent that is labeled.

Docket No. SP02-143 (015275-060007)

Application Serial No.: 10/602,242

11. (Currently Amended) The method according to claim 10, wherein ~~said the~~ monitoring step comprises detecting for the presence of the label.
12. (Currently Amended) The method according to claim 1, wherein the monitoring step comprises detecting directly a physical change due to the binding of ~~said target compound~~ the toxin to ~~said the~~ biological lipid membranes.
13. (Currently Amended) The method according to claim 1, wherein the ~~target compound~~ toxin has no labeled constituent.
14. (Currently Amended) The method according to claim 1, wherein ~~said the~~ method employs a labeled toxin or known compounds with an affinity to the toxin ~~molecule~~ or to ~~the a~~ receptor site of the toxin.
15. (Currently Amended) The method according to claim 1, ~~said the~~ toxin detection sample can be a synthetic or natural toxin, or from a human, animal, plant, food, or environmental source.
16. (Original) The method of claim 1, wherein the substrate includes a glass, ceramic, metal-oxide, metal, non-metal, silicon, or polymer material.
17. (Currently Amended) The method according to claim 1, wherein ~~said the~~ substrate is either nano- or micro-porous.
18. (Original) The method according to claim 1, wherein the substrate is configured as a bead, chip, a slide, a multiwell microplate, or a microcolumn.
- 19-41. (Cancelled)
42. (Currently Amended) A method for detecting a binding event between a probe and target compound, ~~said the~~ method comprising:
- providing ~~an a~~ dried array comprising a plurality of biological lipid membrane microspots associated with a surface of a substrate, wherein ~~said the~~ surface comprises a coating of an amine-presenting molecule, and each of ~~said the~~ biological lipid membrane microspots comprises ~~said biological membranes are deposited directly to said coating a~~ mixture of a host lipid and a doped lipid deposited onto the surface.

Docket No. SP02-143 (015275-060007)  
Application Serial No.: 10/602,242

contacting a solution comprising a target compound with ~~said the~~ array of probe biological lipid membrane microspots; and

detecting a binding event between at least one or more of the probe biological lipid membrane microspots with one or more constituents of the target compound.

43. (Currently Amended) The method of claim 42, wherein at least one of the constituents of the target compound is labeled and the detection step comprises detecting the presence of the label.

44. (Currently Amended) The method of claim ~~42~~ 43, wherein the detection of the label is carried out by imaging based on fluorescence, phosphorescence, chemiluminescence, or resonance light scattering emanating from the bound target.

45. (Original) The method of claim 42, further comprising washing the substrate of unbound target prior to the detection step.

46. (Currently Amended) The method of claim 42, wherein the array of biological lipid membrane microspots is incubated with a labeled target compound and an unlabeled target compound, and the binding event between the unlabeled target compound and the probe is determined by measuring a decrease in the signal of the label due to competition between the labeled target and the unlabeled target compound for the probe.

47. (Original) The method of claim 42, wherein the target compound is unlabeled and the binding event is determined by a change in physical properties at the interface.

48. (Original) The method of claim 47, wherein the change in physical properties at the interface is a change in refractive index or electrical impedance.

49. (Currently Amended) A method for identifying and detecting a toxin in a sample, ~~said the~~ method comprising:

providing ~~an a~~ dried array comprising a plurality of biological lipid membrane microspots associated with a surface of a substrate, wherein ~~said the~~ surface comprises a coating of an amine-presenting molecule, and each of ~~said the~~ biological lipid membrane microspots comprises ~~said biological membranes are deposited directly to said coating a~~ mixture of a host lipid and a doped lipid deposited onto the surface;

Docket No. SP02-143 (015275-060007)  
Application Serial No.: 10/602,242

contacting a sample solution comprising an unknown toxin with ~~said the~~ array of biological lipid membrane microspots; and

detecting the binding profile of the unknown toxin to at least one or more of the biological lipid membrane microspots.

50. (Previously Presented) The method of claim 49, wherein the sample is a biofluid from a specific infectious tissue, a solution from food or environmental sources or an aqueous solution comprising chemical toxins collected or concentrated from a contaminated gaseous media.

51. (Currently Amended) The method according to claim 1, wherein ~~said the~~ amine-presenting molecule is  $\gamma$ -aminopropylsilane.

52. (Currently Amended) The method according to claim 1, wherein ~~said the~~ amine-presenting molecule is selected from the group consisting of poly-lysine, polyethyleneimine, and chitosan.

53. (Currently Amended) The method according to claim 42, wherein ~~said the~~ amine-presenting molecule is  $\gamma$ -aminopropylsilane.

54. (Currently Amended) The method according to claim 42, wherein ~~said the~~ amine-presenting molecule is selected from the group consisting of poly-lysine, polyethyleneimine, and chitosan.

55. (Currently Amended) The method according to claim 49, wherein ~~said the~~ amine-presenting molecule is  $\gamma$ -aminopropylsilane.

56. (Currently Amended) The method according to claim 49, wherein ~~said the~~ amine-presenting molecule is selected from the group consisting of poly-lysine, polyethyleneimine, and chitosan.

57. (Currently Amended) A method for detecting a binding event between a receptor in a biological lipid membrane and a target compound, said method comprising:

contacting a solution comprising the target compound with ~~an a dried~~ array which comprises a plurality of biological lipid membranes ~~directly deposited to a coating on a surface of said array, associated with a surface of a substrate, wherein~~ each of ~~said the~~

Docket No. SP02-143 (015275-060007)

Application Serial No.: 10/602,242

biological ~~membrane comprising a receptor of interest~~ lipid membranes comprise a mixture of a host lipid and a receptor of interest and is deposited onto a coating of the surface of the substrate;

detecting a binding event between one or more receptors in said the biological lipid membranes and one or more constituents of the target compound, and

wherein ~~said the coating of the surface~~ comprises an amine-presenting molecule or a silane.

58. (Currently Amended) The method of claim 57, wherein ~~said the~~ coating consists of a coating of ~~said the~~ amine-presenting molecule.

59. (Currently Amended) The method of claim 58, wherein ~~said the~~ amine-presenting molecule is selected from the group consisting of  $\gamma$ -aminopropylsilane, polyamine, and chitosan.

60. (Currently Amended) The method of claim 57, wherein ~~said the~~ coating comprises a coating of ~~said the~~ silane.

61. (Currently Amended) The method of claim 60, wherein ~~said the~~ silane comprises a hydroxyl, a carboxyl, a phosphate, a sulfonated, or a thiol group.